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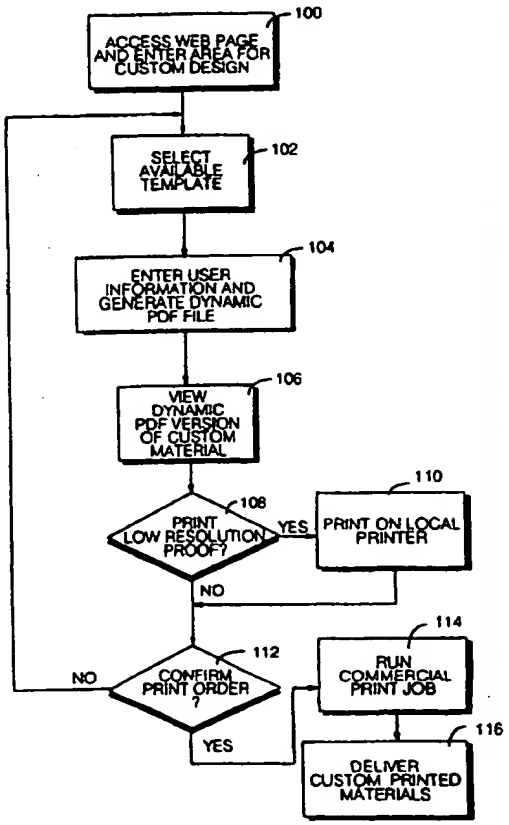
(54) Title: PROOFING SYSTEM UTILIZING DYNAMIC PDF TECHNOLOGY FOR THE INTERFACE FOR TEMPLATED PRINTING

(57) Abstract

A technique for easily creating and proofing customized printed material before printing on a production printing system. A user may connect with an internet web site provided by a commercial printing service and select from a plurality of available templates for the printed material. The user can then select additional stored information to be included in the customized printed material, or can input variable information through a keyboard or the like. A portable document format (PDF) builder generates a dynamic PDF file from the selected template and the selected or variable data from the user. The dynamic file can then be displayed at the front end to provide an accurate view of how the printed material would look. Additionally, a hard copy proofing version of the printed material may be printed at the front end. Once the layout of the printed material is confirmed, a production printing system is used to print multiple copies of the customized printed material.



PROOFING SYSTEM UTILIZING DYNAMIC PDF TECHNOLOGY FOR THE INTERFACE FOR TEMPLATED PRINTING

CROSS REFERENCE TO RELATED APPLICATION

This application claims the benefit of United States provisional patent application No. 60/024,179, filed August 20, 1996, which is hereby incorporated by reference in its entirety.

BACKGROUND OF THE INVENTION

The present invention relates to a technique for creating customized documents or other printed materials. More particularly, the present invention relates to a technique for creating customized printed materials utilizing template formats, stored reference information and user input data.

It is desirable in modern printing systems to allow a user to readily customize printed materials for a particular need. For example, a user may select stored images and combine them with user specified input text and stored references to produce a point of sale (POS) display or the like. Such a "response on demand" system increases production flexibility and simplifies the design process. With the growing importance and availability of the Internet, the possibilities of such a response on demand system increase greatly.

National or regional retail chains, for example, often require large numbers of point of sale displays for use in their stores. These point of sale displays are typically printed to order by a commercial printing service and distributed to the various stores for use. Other types of businesses or organizations which frequently utilize point of sale displays include soft drink bottlers or major breweries that provide promotional materials to networks of distributors, cellular telephone service providers, trade associations, and others.

The need for customized printed materials, of course, extends beyond point of sale displays. For example, direct mail marketers continually develop advertising flyers

After the data was provided, such a system could then build dynamic HTML (Hypertext Mark-up Language) pages for viewing in the internet browser and proofing. The pages may be built on the references selected by the user on the main HTML page. The low resolution images of the referenced images could be used in building the dynamic HTML page. However, attempts to mimic the real layout of the document to be ultimately printed are difficult because with the HTML standard there is a limit of how closely the HTML pages match the final printed pages in appearance. Moreover, differences in appearance are usually device dependent and may vary from user to user.

If the selections were confirmed, the records with the selections that consisted of the references to the selectable objects (including the images) from the database and the user provided variable data (name, address, etc.) were fed into the XLC system, which uses the template information, high resolution images referenced on the records, and the variable data from the records to do the final printing.

One problem with this system is that the printed pages do not always look the way the users thought they would based on a viewing of the HTML page. As a result, the finished product may prove unsuited for its intended purpose, and the customer would need to redesign the printed materials -- costing time, money and effort. Accordingly, a proofing system that would accurately show the users how their selections would look in print before the orders were sent for printing is highly advantageous.

BRIEF SUMMARY

In accordance with one aspect of the present invention, users are provided with a visual representation of a template for customized printed materials before user data is entered so the user can better understand and visualize how the data will ultimately be placed in the final document. The templates may be imaged and then presented on an HTML internet web page in Portable Document Format (PDF). The users could see

FIGURE 1 is a system diagram illustrating an example proofing system in accordance with the present invention;

FIGURE 1A is a flow chart illustrating an example of steps which may be implemented in connection with the system of FIGURE 1 to custom design printed materials;

FIGURE 2 is an example of a first level screen display in accordance with a preferred embodiment of the present invention;

FIGURE 3 is an example of a second level screen display in accordance with a preferred embodiment of the present invention;

FIGURE 4 is another example of a second level screen display in accordance with a preferred embodiment of the present invention;

FIGURE 5 is an example of a closing screen display in accordance with a preferred embodiment of the present invention; and

FIGURE 6 is an example of a point-of-sale display card which may be produced in accordance with the present invention.

DETAILED DESCRIPTION OF AN EXEMPLARY EMBODIMENT

The following detailed description sets forth a preferred exemplary embodiment in accordance with the present invention. It should be noted, however, that those having ordinary skill in the art will recognize modifications and changes that may be made without departing from the spirit of the invention. For example, although the example embodiment is described in the context of an example system wherein a user utilizes the internet to access template information at a remote location and input user specified information, other arrangements are possible.

Referring now to FIGURE 1, an example proofing system constructed in accordance with the present invention includes a front end 2 which preferably is capable of establishing remote contact with an internet WEB site. A reference library, low resolution images, high resolution images, and other data may be stored in a memory 4 at the remote location. The front end 2 is typically located at the office of a

confirmed and high quality prints may be produced by a high resolution color production printing system 10.

An example operation of the proofing system illustrated in Figure 1 is illustrated in Figure 1A. More particularly, at step 100, a designer working at the front end station 2 utilizes a conventional internet browser and connection to access the commercial printer web page and enter the area in which customers may design their own custom printed materials. Typically, access to this area of the web page may be password protected and restricted to customers having established accounts with the printer.

As illustrated more particularly below in conjunction with Figures 2 through 5, the user is prompted to select an available template form (function block 102) and to provide selected or variable information (function block 104) for use by the PDF builder 6 to complete a proof of the custom printed material. The particular template forms available to the user may be tailored to the specific user. For example, a supermarket chain may have a number of available templates which would not be suitable for a beer distributor or direct mail marketer, and vice versa. Accordingly, the available templates may be predetermined for a particular customer and presented to the user in accordance with the sign-on information provided by the user in accessing the web page. The templates are preferably imaged in advance and displayed for the user on the HTML web page in PDF. These templates can be seen on the HTML page prior to customization.

With regard to function block 104, the user may select from a plurality of predetermined options. For example, the user could be prompted to select a specific type of package to appear on the custom printed material. (See, *e.g.*, Figure 3, at item 2). Additionally, the user can be given the choice of selecting from a plurality of predetermined options or, if no predetermined option is suitable, providing the user's own variable information. (See, *e.g.*, Figure 3 at items 3 and 4). The variable user information may be entered, for example, at the keyboard of front end 2.

The PDF builder 6 then creates a dynamic PDF file on-the-fly based on the selected template information, the selected or variable data provided by the users, and

that is not to be changed. Additionally, it should be understood that the order of steps illustrated in Figure 1A can be modified without departing from the spirit of the present invention. For example, a user might choose to print a low resolution copy of the proofing version of the custom printed material prior to, of even in lieu of, display on a screen at the front end 2.

FIGURE 2 illustrates a sample first level screen display which may appear at front end 2 after a user initially accesses the proofing system. Briefly, the user is provided, for example, with a number of available templates such as a generic shelf display card (Shelf Talker Generic 1), a vertical banner, or an aisle display card (ELM Chill Aisle). It should be understood that these templates are merely for the sake of illustration, and other templates, of course, may be presented depending on the particular needs and desires of the user. The user may select a template by clicking on the appropriate choice with a mouse 2A.

Once the template is selected, a second level screen display appears at front end 2. FIGURE 3 illustrates a sample second level screen display menu appropriate for the selection of the shelf display card. A PDF version of the template is displayed at the top portion of the screen for reference by the user. This template is preferably imaged in advance and stored in memory 4. The user is prompted to select a package image to be included in the package area of the template. Additionally, the user is prompted to: (a) select a stored description or to enter a different description of the user's choosing; (b) select a stored price or enter a different price; (c) select the number of copies needed from the production printing system; and (d) to identify themselves. The identification of the user may be used for billing and/or distribution purposes in accordance with previously determined customer information.

Once all the necessary data is entered, the user may click on a button to indicate completion of data entry. Although the foregoing describes a single screen display page for entry of data, multiple screens could likewise be employed.

FIGURE 4 illustrates another example second level display. In particular, the screen display of FIGURE 4 may be used with an aisle display card (ELM Chill Aisle).

WHAT IS CLAIMED IS:

1. A method for creating customized material for printing, comprising the steps of:

selecting a template;

obtaining a user-determined information for incorporation in said customized material;

creating a dynamic portable document format (PDF) file based on the selected template and said user-determined information;

displaying said dynamic PDF file to provide a proofing version of said customized material; and

modifying the selected template or said user-selected information if changes are desired in the proofing version of said customized material.

2. The method of claim 1, wherein said step of obtaining user-determined information includes receiving a selection from a plurality of predetermined options.

3. The method of claim 1, wherein said step of providing user-determined information includes receiving information input directly by a user.

4. The method of claim 1, including the further step of printing one or more copies of said customized material on a production printer following approval of the proofing version of the customized material.

5. The method of claim 4, including the further step of printing said proofing version of said customized material for review prior to performing said step of printing one or more copies of said customized material on said production printer.

6. The method of claim 1, including the preliminary steps of establishing an internet connection with a user at a remote location and displaying to said remote user a plurality of templates in portable document format for selection by said user.

13. The apparatus of claim 12, wherein said production printer utilizes XLC technology and operates on the same user information and selected reference information and images from said memory used to generate said dynamic PDF file.

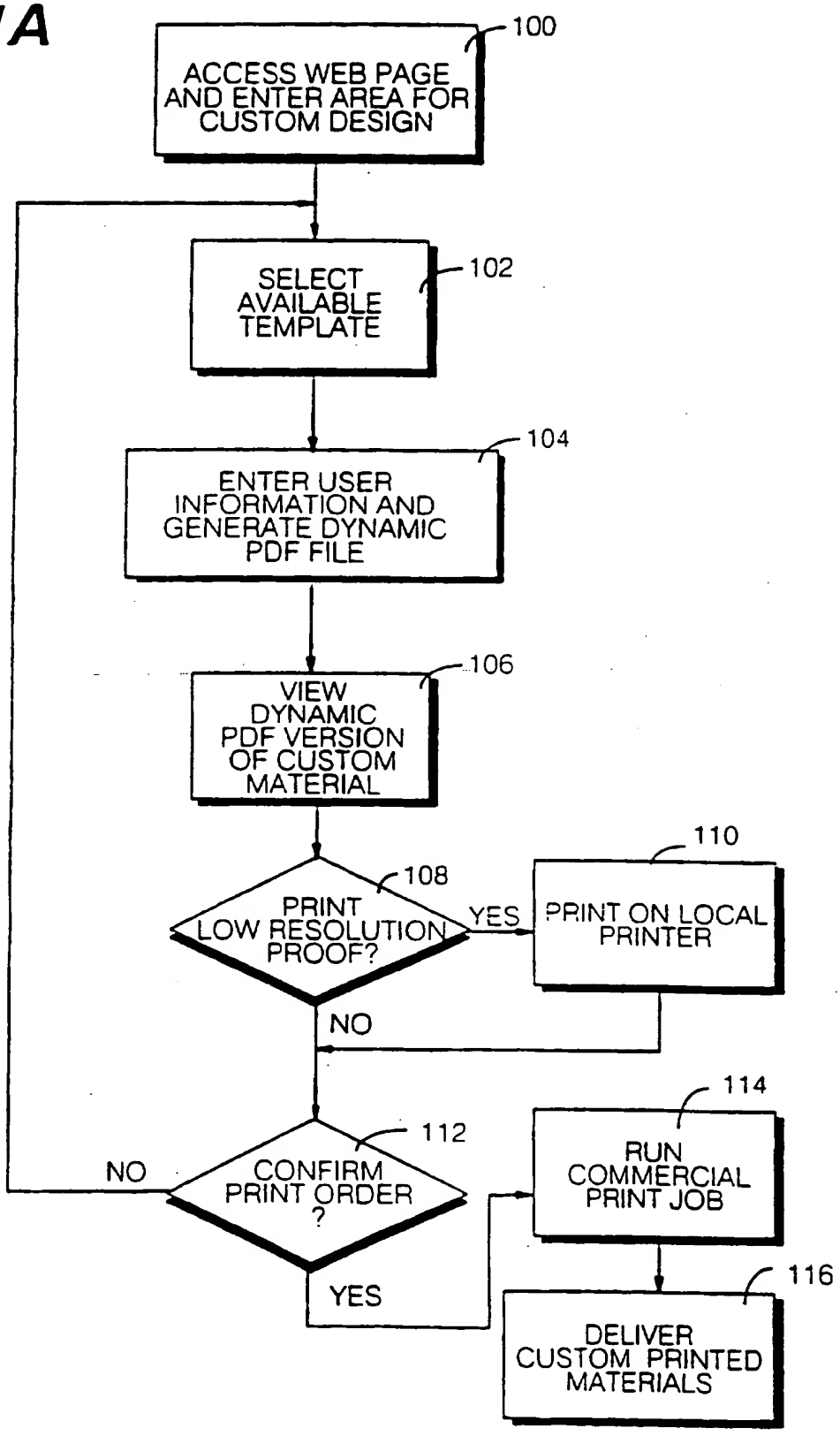
14. The apparatus of claim 12, wherein said production printer utilizes conventional printing technology and operates on said dynamic PDF file to replace low resolution images used in generating the dynamic PDF file with high resolution images.

15. The apparatus of claim 13, wherein the low resolution images are replaced with high resolution images by an open pre-press interface before printing.

16. The apparatus of claim 11, further including a front end which includes a display screen and a user input device which communicates with said PDF builder through said interface.

17. The apparatus of claim 16, wherein said front end further includes a printer operable to provide a hard copy of said proofing version of the customized material.

FIG. 1A



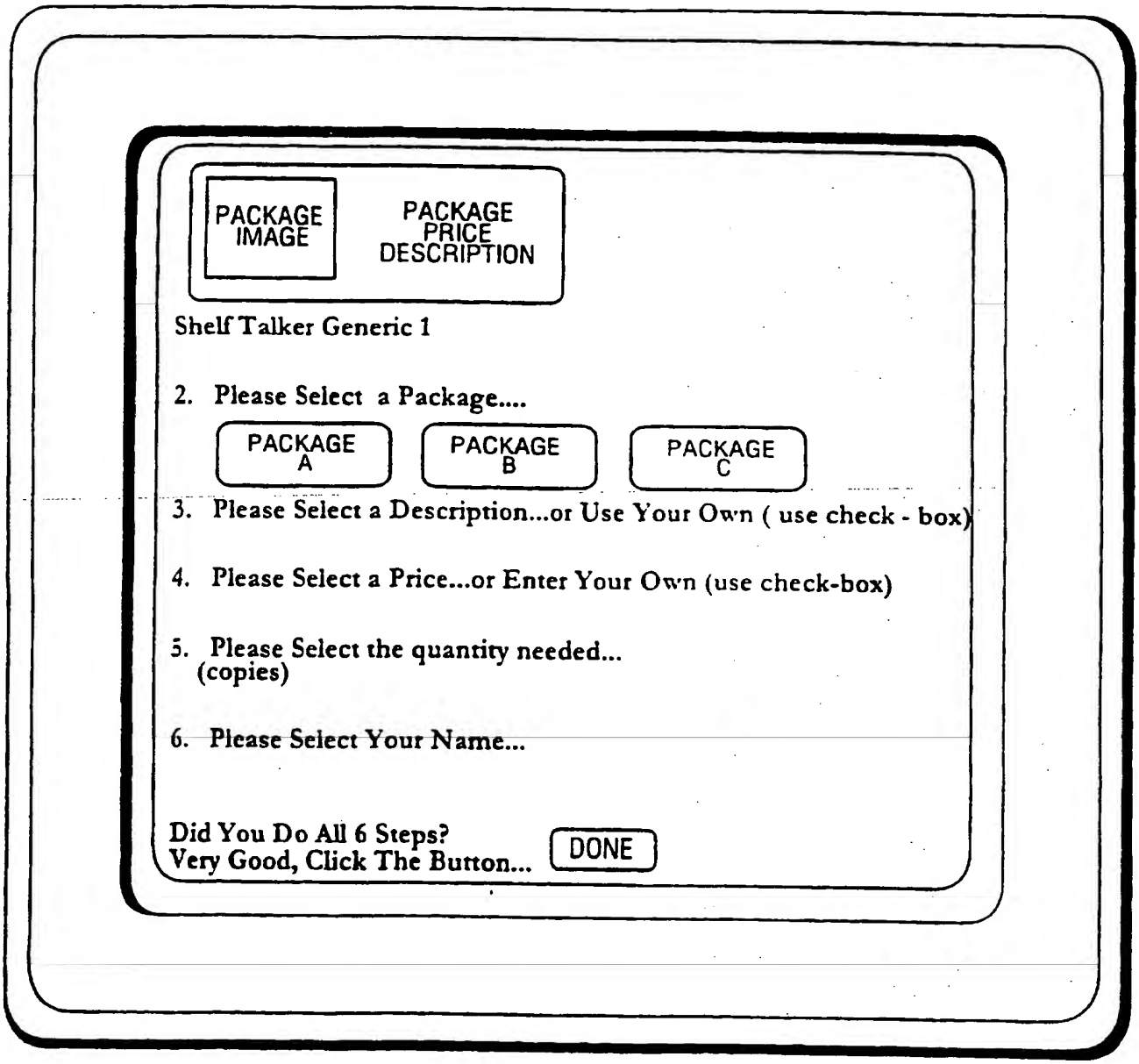


FIG. 3

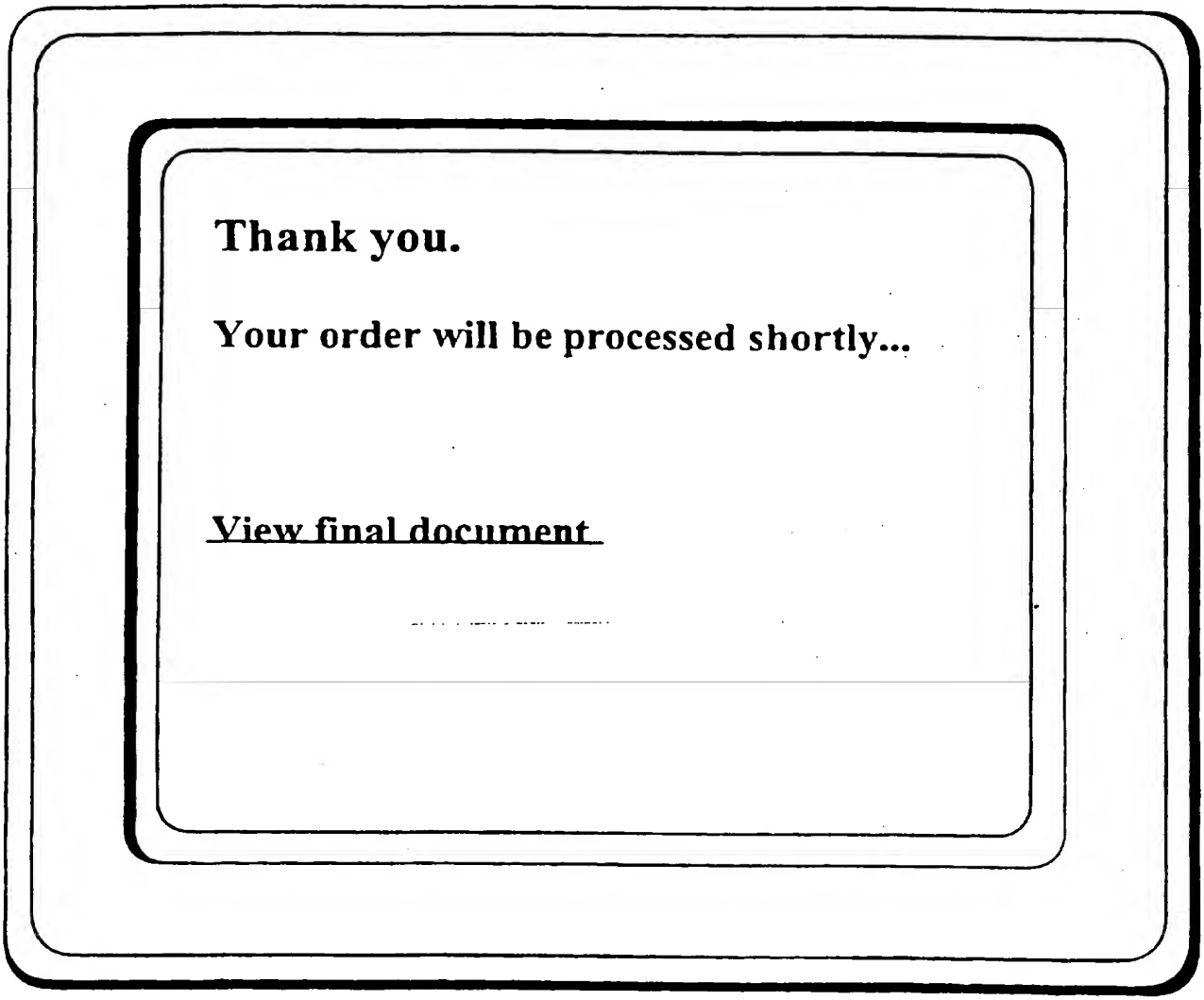


FIG. 5

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 97/14343

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 G06F17/60

According to International Patent Classification(IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 327 265 A (MCDONALD BRUCE A) 5 July 1994 see column 1, line 44 - column 2, line 35; claims 1-7; figure 1 ---	1-17
X	ANONYMOUS: "Virtual Image Editing" IBM TECHNICAL DISCLOSURE BULLETIN, vol. 39, no. 8, August 1996, NEW YORK, US, pages 93-96, XP000638148 see the whole document ---	1-17
A	US 5 303 342 A (EDGE CHRISTOPHER J) 12 April 1994 see abstract; figures 1,6-8 see column 2, line 24 - line 53 see column 5, line 62 - column 6, line 10 --- -/--	1-17

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

2

Date of the actual completion of the international search	Date of mailing of the international search report
10 December 1997	14/01/1998

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Gardiner, A

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US 97/14343

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5327265 A	05-07-94	NONE	
US 5303342 A	12-04-94	CA 2046085 A	14-01-92
		EP 0466461 A	15-01-92
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